

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM R. LAFONTAINE, JR.,
PAUL A. MESCHER
and CHARLES G. WOYCHIK

Appeal No. 1998-1623
Application 08/433,625¹

ON BRIEF

Before JERRY SMITH, FLEMING and RUGGIERO, **Administrative Patent Judges.**

FLEMING, **Administrative Patent Judge.**

¹Application for patent filed May 3, 1995, which is a division of Application 08/189,530, filed January 31, 1994. Application 08/189,530 resulted in Appeal No. 96-1846, which was decided by this panel, in which we affirmed-in-part the Examiner's decision. We note that we have different claims and facts before us on this appeal and thereby *res judicata* is not an issue.

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DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 20 through 37, all of the claims pending in the application. Claims 1 through 19 have been canceled.

The invention relates to a method for joining a semiconductor integrated circuit chip to a chip carrier substrate and the resulting chip package.

Independent claim 20 is reproduced as follows:

20. A method for fabricating a semiconductor chip package, comprising the steps of:

bringing a region of solder, mounted on a chip contact pad of a semiconductor integrated circuit chip, into contact with a carrier contact pad of a chip carrier substrate, which solder region has a composition which includes at least a first component and a second component and which carrier contact pad includes a pad region having a composition which includes at least a third component; and

forming a region of material at and/or adjacent to the interface between said solder region and said carrier contact pad, which material region has a composition which includes at least said second component and said third component, while using said solder region and said carrier contact pad as sources of said second component and said third component, said material region having a melting temperature which is lower than that of said solder region and of said carrier contact pad.

The reference relied on by the Examiner is as follows:

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Brady et al. (Brady)

5,134,460

July 28, 1992

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Claims 21, 22, 31, 32 and 34-37 stand rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the invention.

Claims 20-24, 26, 28, 31 and 32 stand rejected under 35 U.S.C. § 102 as being anticipated by Brady.

Claims 25, 27, 29, 30 and 33-37 stand rejected under 35 U.S.C. § 103 as being unpatentable over Brady.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the briefs² and answer for the details thereof.

OPINION

After careful review of the evidence before us, we agree with the Examiner that claims 20, 23, 24, 26 and 28 are properly rejected under 35 U.S.C. § 102. Thus, we will sustain the rejection of these claims, but we will reverse the rejection of the remaining claims on appeal for the reasons

² The Appellants filed an appeal brief on May 30, 1997. Appellants filed a reply brief on October 2, 1997. The Examiner mailed a communication on December 8, 1997 stating that the reply brief has been entered and considered but no further response by the Examiner is deemed necessary.

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set forth ***infra.***

Claims 21, 22, 31, 32 and 34 through 37 stand rejected under 35 U.S.C. § 112, second paragraph. The Examiner argues that the term "dissociate" is defined by the Appellants as a process by which the chemical composition breaks up into simpler constituents. The Examiner argues that Appellants' invention does not break up into simpler constituents.

In the reply brief, Appellants agree that the definition of dissociate is "to subject to a process by which a chemical composition breaks into simpler constituents." Appellants argue that this is indeed exactly what happens in the instant application. Appellants point to Figure 1 where it can be seen that eutectic at 84.4 percent lead and 15.6 percent gold is comprised of the intermetallic compound AuPb_2 as one component and elemental lead as the second component. This indeed is a gold/lead eutectic, with one component being lead and the other component being PbAu_2 . Appellants point out that the AuPb_2 dissociates into its constituents of gold and lead which provides for the gold to diffuse.

Upon our determination of whether the claims set out and circumscribe the particular area with a reasonable degree of

precision and particularity, we find in light of the teachings of the disclosure that it would be interpreted by one of ordinary skill in the art that the term "dissociate" describes the process in which the AuPb_2 breaks down into the simpler constituents of gold and lead. Therefore, we will not sustain the Examiner's rejection of the claims 21, 22, 31, 32 and 34 through 37 under 35 U.S.C. § 112, second paragraph.

Claims 20 through 24, 26, 28, 31 and 32 stand rejected under 35 U.S.C. § 102 as being anticipated by Brady.

At the outset, we note that Appellants state on page 5 of the brief that claims 20, 23, 24, 26 and 28 stand or fall together. We note that Appellants argue all of these claims as a single group in the brief. We further note that Appellants argue claims 21, 22, 31 and 32 separately. 37 CFR § 1.192(c)(7) (July 1, 1995) **as amended at** 60 Fed. Reg. 14518 (March 17, 1995), which was controlling at the time of Appellants' filing the brief, states:

For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the

ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

We will, thereby, consider the Appellants' claims 20, 23, 24, 26 and 28 as standing or falling together and we will treat claim 20 as a representative claim of that group.

It is axiomatic that anticipation of a claim under 35 U.S.C. 102 can be found only if the prior art reference discloses every element of the claim. ***See In re King***, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) and ***Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.***, 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984).

The Examiner rejects Appellants' claim 20 by relying on Brady's second embodiment shown in Figure 3. In particular, the Examiner points to column 7, lines 35-68, and column 8, lines 1-14. The Examiner argues that Brady teaches a method for

fabricating a semiconductor chip package comprising the step of bringing a region of solder shown as element 55 in Figure 3, mounted on a chip contact pad of a semiconductor chip shown as

element 42 into contact with a carrier contact pad shown as element 60. The Examiner further argues that the solder region, element 55, is disclosed as having a composition which includes at least a first component and a second component.

The Examiner further points out that the carrier contact pad includes a pad region having a composition which includes at least a third component shown as element 62 in Figure 3.

Appellants argue on page 11 of the brief, that claim 20 requires that the solder region includes at least a first component and a second component. Appellants argue that this is not taught or suggested by Brady and that the solder region includes only a first component and does not have two components. Appellants concluded that a specific limitation,

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i.e., the solder ball having two components is not met by Brady, and hence the rejection under 35 U.S.C. § 102 must fail since each and every element of the claim is not found in Brady.

On page 5 of the answer, the Examiner points to column 7, lines 56-57 which states that the solder region, element 55 shown in Figure 3, may be formed of tin, lead, and indium or the combinations thereof. The Examiner argues that the combinations of tin, lead and indium is a three component solder region that reads on Appellants' claim language found in claim 20.

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In the reply brief, Appellants argue that Brady does not specifically define what is meant by the combination of tin, lead and indium. Appellants asked the question "Is it one or more layers or is it an alloy?"

As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). Claims will be given their broadest reasonable interpretation consistent with the specification, and limitations appearing in the specification are not to be read into the claims. *In re Etter*, 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed. Cir. 1985).

We note that Appellants' claim 20 recites that the solder region has a composition which includes at least a first component and a second component. We fail to find that Appellants' claim 20 precludes the solder region having layers or being an alloy. Therefore, we find that the Brady teaching of a combination of tin, lead and indium whether it is layers or whether it is an alloy meets Appellants' claim limitations as

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recited in Appellants' claim 20. Therefore, we will sustain the Examiner's rejection of claims 20, 23, 24, 26 and 28 under 35 U.S.C. § 102.

In regard to claims 21, 22, 31 and 32, Appellants argue on pages 11 and 12 of the brief, that Brady does not teach any dissociation or diffusion steps as recited in these claims. In particular, Appellants argue on page 2 of the reply brief that there is no indication that a relatively low melting point composition is formed which includes at least one component from the solder and the component of the carrier pad nor is there any dissociation and diffusion disclosed.

The Examiner responds on page 5 that Brady does disclose dissociation and diffusion steps. The Examiner argues that the intermingling and eventual blending as taught in column 8, lines 4-8, of Brady meet the dissociation and diffusion steps.

"Inherency and obviousness are distinct concepts." **W.L. Gore & Associates, Inc. v. Garlock, Inc.**, 721 F.2d 1540, 220 USPQ 303, 314 (Fed. Cir. 1983) **citing In re Spormann**, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966). Furthermore, "[t]o establish inherency, the extrinsic evidence 'must make clear

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that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.'" ***In re Robertson***, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) ***citing Continental Can Co v. Monsanto Co.***, 948 F.3d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

We note that Brady teaches in column 7, line 67 through column 8, line 10, that the two layers blend together during the bonding process. We note that Brady does not teach a dissociation of the two materials nor does Brady teach diffusion of the materials. We fail to find that the Examiner has established that these two steps are inherent to the method steps used by Brady. The Examiner has not shown that these two steps are necessarily present in the process used by Brady and it would be so recognized by a person of ordinary skill in the art. Therefore, we will not sustain the Examiner's rejection of claims 21, 22, 31 and 32 under 35 U.S.C. § 102.

In regards to the rejection of claims 25, 27, 29, 30 and 33 through 37 under 35 U.S.C. § 103, we note that in the final

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rejection, the Examiner takes an official notice that silver is well known to be useful as plating and that organic carriers are well known.

On page 13 of the brief, Appellants argue that there is no indication in Brady that silver would be useful in a three component system. Appellants further argue that there is no indication that the Brady system would work at temperatures low enough not to damage an organic substrate.

We are not inclined to dispense with proof by evidence when the proposition at issue is not supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a *prima facie* case. *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); *In re Knapp-Monarch Co.*, 296 F.2d 230, 232, 132 USPQ 6, 8 (CCPA 1961); *In re Cofer*, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966). Our reviewing court states in *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984) the following:

The Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), focused on the procedural and evidentiary processes in reaching a conclusion under Section 103. As adapted to ex parte procedure, Graham is interpreted as continuing to place the "burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of

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an application under section 102 and 103". ***Citing
In re Warner***, 379 F.2d 1011, 1020, 154 USPQ 173, 177
(CCPA 1967).

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In view of the foregoing, the decision of the Examiner rejecting claims 20, 23, 24, 26 and 28 under 35 U.S.C. § 102 is affirmed; however, the decision of the Examiner rejecting claims 21, 22, 31 and 32 under 35 U.S.C. § 102 is reversed. Furthermore, the decision of the Examiner rejecting claims 25, 27, 29, 30 and 33 through 37 under 35 U.S.C. § 103 is reversed. Finally, the decision of the Examiner rejecting claims 21, 22, 31, 32 and 34 through 37 under 35 U.S.C. § 112, second paragraph is reversed.

No time period taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

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| JERRY SMITH |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| MICHAEL R. FLEMING |) | |
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